

R E M A R K S

Applicant appreciates the Examiner's thorough consideration with respect to the present application. Claims 1-20 are currently pending. Claims 11-20 have been added for the Examiner's consideration. Claims 1 and 13 are independent. Claims 2 and 10 have been cancelled. Entry of the above amendments is earnestly solicited. Reconsideration of this application, as amended, is respectfully requested.

Applicant submits that the subject matter of additional claims 11-20 is fully supported and enabled by the original written description (including, but not specifically limited to pages 1-2, 5 and 15, line 14 through page 20, and Figures 1-7).

Claims 1, 3 and 5-9 have been amended. However, Applicant has provided a complete listing of the claims hereinabove for the Examiner's convenience.

Minor Informalities/Objections

The Examiner has objected to portions of the disclosure due to the presence of alleged minor informalities. Applicant respectfully submits that the term "adsorbed" on page 18, line 6 is proper. The Examiner is reminded that this portion of the disclosure discusses gas *adsorption* processes. Although absorbed particles can be detected with the present invention, the example

provided on page 18 is properly described as “adsorbed.” The Examiner is further reminded that, although not limited thereto, an adsorption process often refers to particles attracting and adhering to a surface while absorption usually refers to particles passing within a substance, e.g. within internal pores. Accordingly, no change is required.

Applicant has amended the title as requested by the Examiner to HIGH-FREQUENCY OSCILLATION CIRCUIT AND MEASURING DEVICE. Applicant reminds the Examiner that this title is consistent with the preambles of the claimed invention. Accordingly, these objections have been obviated and/or rendered moot.

Claim Rejections Under 35 U.S.C. § 112

Claims 1-10 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to enable one of ordinary skill in the art how to make and/or use the claimed invention. This rejection is traversed.

Applicant submits that the claims are fully enabled by the original written description. However, in order to timely expedite the prosecution of the present application, Applicant has amended claims 1 and 3-9 to clarify the claimed invention for the Examiner. In addition, Applicant fails to appreciate how the Examiner can be confused by the term “closed circuit.” Applicant submits that one of ordinary skill in the art would appreciate the scope and meaning of this

term from a cursory review of the disclosure, including Figures 1(a), 2(a), 3(a), 4(a) and 7. Applicant has assumed that the Examiner would prefer the term "closed loop circuit." However, since the Examiner has not provided additional details as to the nature of the alleged confusion, Applicant has amended this claim limitation to include closed loop circuit. Applicant would appreciate a suggested alternative if the Examiner persists with this rejection. Applicant submits that the aforementioned amendments have been made to merely clarify the claimed invention for the Examiner and do not narrow the scope of the claimed invention.

In light of the foregoing amendments and remarks, Applicant respectfully submits that all of the Examiner's stated grounds of rejections have been obviated and/or rendered moot.

Claim Rejections Under 35 U.S.C. § 102

Claims 1-3, 6, 8 and 10 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Sakurai (U.S. Patent No. 5,801,596). Claims 1, 2, 4, 6, 7 and 10 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by JP 3165236. These rejections are respectfully traversed.

In light of the foregoing amendments to the claims, Applicant submits that these rejections have been obviated and/or rendered moot. The unique

combination of elements found in claims 1 and 13 is NOT taught or suggested by the prior art of record.

For example, the prior art of record fails to teach or suggest the limitations of a closed loop circuit including at least one logic element, said at least one logic element having an input and an output, wherein said closed loop circuit begins at said output and returns to said output of said at least one logic element; a capacitor being disposed within said closed loop circuit; a resistor being disposed within said closed loop circuit; and a crystal oscillator for high frequency being disposed within said closed loop circuit, said crystal oscillator being connected in series with said capacitor and in parallel with said resistor. Applicant submits that the Examiner has not identified the additional limitations of claim 9 and 13 in the prior art of record.

The claimed invention is directed toward a unique combination of elements that permits a logic element to act as an inexpensive and simple measuring sensor for a variety of predetermined parameters (see page 1 and pages 15-18 of the present application for examples of predetermined parameters).

Accordingly, reconsideration and withdrawal of the claim rejection are respectfully requested. Moreover, the Applicant respectfully submits that the instant application is in a condition for allowance.

In accordance with the above discussion of the patents relied upon by the Examiner, Applicant respectfully submits that these documents, either in combination together or standing alone, fail to teach or suggest the invention as is set forth by the claims of the instant application. Accordingly, reconsideration and withdrawal of the claim rejection are respectfully requested.

As to the dependent claims, Applicant respectfully submits that these claims are allowable due to their dependence upon an allowable independent claim, as well as for additional limitations provided by these claims.

Conclusion

All the stated grounds of rejection have been properly traversed and/or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently pending rejections and that they be withdrawn.

It is believed that a full and complete response has been made to the Office Action, and that as such, the Examiner is respectfully requested to send the application to Issue.

Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicant respectfully petition for a two (2) months extension of time for filing a response in connection with the present application and the required fee of **\$400.00** is attached hereto.

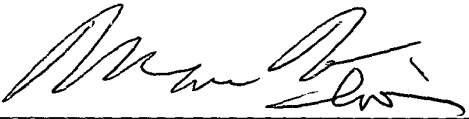
In the event there are any matters remaining in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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MSW/MTS/cl
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Attachment: Version with Markings to Show Changes Made

MARKED-UP VERSION OF THE AMENDMENTS

IN THE SPECIFICATION:

The TITLE OF THE INVENTION has been amended to:

--HIGH-FREQUENCY OSCILLATION CIRCUIT AND MEASURING DEVICE--

Page 1:

The paragraph beginning on line 6 has been amended as follows:

--The present invention relates to a high-frequency oscillation circuit, and more particularly, to a high-frequency oscillation circuit useful for enhancing sensitivity of various measuring instruments used as weight [sensor] sensors, chemical [sensor] sensors, [biosensor] biosensors, viscosity [sensor] sensors, film thickness [meter] meters, gas [sensor] sensors, floating dust [sensor] sensors, immunity [sensor] sensors or the like.--

The paragraph beginning on line 15 has been amended as follows:

--While recently various measuring instruments using a crystal as a weight sensor, chemical sensor, biosensor, viscosity sensor, film thickness meter or the like have been numerously developed, [it has been needed urgently to develop a] an urgent need has developed for high precision and highly sensitive measuring instruments to cope with such a demand for diversity of materials to be detected and precise quantitative determination of materials to be detected.--

The paragraph beginning on line 23, page 1 and ending on page 2, line 9, has been amended as follows:

--As is generally known, however, a wafer used for a crystal oscillator has such a nature as to cause distortion (piezo-electric effect) when a voltage is applied to thin film electrodes attached to both side faces [faces] thereof and [return] ~~returns~~ to its initial state when the voltage is removed. Because of this nature, a crystal oscillates at a natural frequency determined by its thickness. Thereby, in a crystal wafer, when its thickness varies by adsorbing a substance, a basic frequency (i.e., the natural oscillation frequency or basic oscillation frequency) of the crystal oscillator is varied.--

Page 5:

The two following paragraphs on line 2 immediately preceding the heading "BRIEF DESCRIPTION OF THE DRAWINGS" has been added:

--These and other aspects of the present invention are accomplished by a high-frequency oscillation circuit comprising a closed loop circuit including at least one logic element, the at least one logic element having an input and an output, wherein the closed loop circuit begins at the output and returns to the output of the at least one logic element; a capacitor being disposed within the closed loop circuit; a resistor being disposed within the closed loop circuit;

and a crystal oscillator for high frequency being disposed within the closed loop circuit, the crystal oscillator being connected in series with the capacitor and in parallel with the resistor.

These and other aspects of the present invention are further accomplished by a measuring instrument for measuring a predetermined parameter, the measuring instrument comprising a closed loop, high frequency oscillation circuit including at least one logic element, the at least one logic element having an input and an output, wherein the closed loop circuit begins at the output and returns to the output of the at least one logic element; a capacitor being disposed within the closed loop circuit; a resistor being disposed within the closed loop circuit; and a sensor for determining the predetermined parameter, wherein the sensor includes a crystal oscillator for high frequency being disposed within the closed loop circuit, the crystal oscillator being connected in series with the capacitor and in parallel with the resistor and having a natural oscillation frequency, a change in the natural oscillation frequency of the crystal oscillator being indicative of the predetermined parameter.--

IN THE CLAIMS:

Claims 2 and 10 have been cancelled.

Claims 11-20 have been added.

The claims have been amended as follows:

1. (Amended) A high-frequency oscillation circuit comprising:

a closed loop circuit including [one or more] ~~at least one~~ logic [elements]
~~element, said at least one logic element having an input and an output,~~
~~wherein said closed loop circuit begins at said output and returns to said~~
~~output of said at least one logic element;~~

~~a capacitor being disposed within said closed loop circuit;~~

~~a resistor being disposed within said closed loop circuit;~~

and

a crystal oscillator for high frequency being disposed within said closed
loop circuit, ~~said crystal oscillator being connected in series with said capacitor~~
~~and in parallel with said resistor.~~

3. (Amended) A high-frequency oscillation circuit as claimed in claim 1,
further comprising [a resistor disposed within said closed circuit, and a]
another capacitor being disposed [outside] ~~externally to and in serial~~
~~connection with~~ said closed loop circuit [and connected with said closed
circuit].

5. (Amended) A high-frequency oscillation circuit as claimed in claim 1, wherein [a] ~~said~~ crystal oscillator of high frequency ~~having a basic oscillation frequency~~ of 30 MHz or more [is used as said crystal oscillator].

6. (Amended) A high-frequency oscillation circuit as claimed in claim 1, [wherein] said [closed circuit is formed by disposing] ~~at least~~ one logic element ~~including a first logic element within said closed loop circuit and another logic element external to said closed loop circuit.~~

7. (Amended) A high-frequency oscillation circuit as claimed in claim 6, wherein said ~~first~~ logic element includes a high-speed CMOs.

8. (Amended) A high-frequency oscillation circuit as claimed in claim 6, [which is oscillated by a] ~~said~~ crystal oscillator having a basic oscillation frequency [in an oscillation frequency area] of ~~between~~ 1 MHz to 500 MHz [or more than 500 MHz with the same circuit constitution].

9. (Amended) A high-frequency oscillation circuit as claimed in claim 6, wherein said crystal oscillator is used as a sensor element for chemical measurement ~~of a predetermined parameter.~~